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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,770

12/12/2003

Kun-Hee Suh

SUH 0019 US

8737

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/733,770	Applicant(s) SUH, KUN-HEE	
	Examiner RUSSELL J. KEMMERLE III	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 December 2007 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. While the disclosure as originally filed discloses the general process of injection molding or extrusion to form the product, these processes being carried out in 2 to 5 minutes is not disclosed.

Claims 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for generally making a material containing magnesium oxide through injection molding or extrusion, does not reasonably provide enablement for doing so where the molding or heating after extrusion takes place for 2 to 5 minutes. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. While the general idea of those claims are enabled by the specification, one of ordinary skill in the art would not be able to practice them without undue experimentation to determine the necessary variables to practice the invention of those claims (for example, the temperature of the mold or heating device, the size of the piece, the pressure of the mold, etc).

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 6 recites that the pressure be 100 kg/cm^2 , however, the disclosure as originally filed only contains teachings to the pressing occurring at 10 kg/cm^2 (for example, page 11 lines 8-13). For the purpose of this Office Action it was assumed that the pressure in claim 6 was intended to read 10 kg/cm^2 , since this is what the applicant pointed to as support for the newly added claim.

Claim Rejections - 35 USC § 102/103

Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Billwiller (US Patent 0,831,321).

Billwiller discloses an insulating block formed by creating an aqueous paste of water, magnesium oxide and vegetable fiber, which is pressed in order to obtain the desired shape of the block (Claim 6, Col 1 lines 24-25).

It should be noted, that claim 5 is a product-by-process claims, and as such, determination of patentability is based on the product formed, and is not limited to products formed by the process described. See *In re Thorpe*, 777 F.2d 695, 698; 227 USPQ 964, 966 (Fed. Cir. 1985) (“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” (Citations omitted))

The product of Billwiller thus produced appears to be either identical with or only slightly different than the product of claim 5. Therefore, claim 5 is found to be anticipated by, or in the alternative, obvious over Billwiller.

Claim Rejections - 35 USC § 103

Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billwiller in view of Stalego (US Patent 4,312,674).

Billwiller is relied upon as discussed above.

Art Unit: 1791

Billwiller does not disclose the method of creating an insulating piece where the aqueous paste is formed into the final product by applying pressure in a mold that has been heated.

Stalego discloses a method of making a magnesium oxide cement article by mixing magnesium oxide cement forming materials and water, then molding the materials under heat and pressure to form the final piece (claim 43). Stalego specifically discloses that the pressing occurs at 210°F (about 99°C) and 400 pounds per square inch (psi) (about 38 kg/cm²) for 4 minutes (Col 3 lines 1-4).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have modified the method of forming an insulating block of Billwiller by using the heated mold of Stalego. This would have been obvious because Stalego discloses that by doing so a finished product is formed much quicker.

While Stalego does not specifically state that the mold is preheated, it would have been obvious to one of ordinary skill in the art that when practicing the invention of Stalego the mold should be preheated prior to pouring in the slurry for molding. This would have been obvious because the molding time is so short (4 minutes) that if the mold were not heated until molding had begun there would not be enough time at the elevated temperature to realize the full benefits of using a heated mold.

Referring specifically to claim 6, Stalego discloses a broad range of temperatures which would cover heating the mold at 100°C. While Stalego appears to only disclose molding at a pressure of about 28 kg/cm², it would have been obvious to one of ordinary skill that the molding pressure would greatly affect the properties of the finished piece

Art Unit: 1791

(such as density and porosity) as well as how long it took to mold. Thus, absent a showing of unexpected results, it would have been obvious to adjust the molding pressure to 10 or 100 kg/cm² in order to achieve the desired results.

“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billwiller in view of Suh (4,548,773).

Billwiller is relied upon as discussed above.

Billwiller does not disclose the method of creating an insulating piece where the aqueous paste is formed into the final product by injection molding and heating the injection mold.

Suh discloses a device that can be used for injection molding a ceramic material to create a desired final shape where the mold includes heating means to increase the temperature of the mold while the ceramic article is being formed (Col 1, lines 7-17, Col 3 lines 56-58).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have combined the method disclosed by Billwiller of creating an aqueous paste of water, magnesium oxide and vegetable fiber with the method taught by Suh of injection molding a ceramic material in a mold containing means for heating the mold since Suh discloses that this is an effective means for forming a ceramic article.

While Billwiller and Suh do not disclose that the molding takes place for 2 to 5 minutes, this would have been obvious to one of ordinary skill in the art when taking the prior art as a whole. This is because one of ordinary skill in the art would recognize when the hardening in the mold was completed and would be motivated to stop the molding at that time in order to avoid the costs of continuing the molding step unnecessarily. Based on the Applicant's amended claims, it appears that injection molding of a magnesium oxide containing compound into a heated mold (such as by the combination of Billwiller and Suh) results in a hardened finished product in 2 to 5 minutes.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billwiller in view of Takahasi (4,764,102).

Billwiller is relied upon as discussed above.

Billwiller does not disclose the method of creating an insulating piece where the aqueous paste is formed into the final product by extruding the paste and passing it through a heating device positioned at the outlet of the extruder.

Takahashi discloses a method of forming a ceramic article where a ceramic material is extruded to form the desired shaped, and the extruded ceramic article is passed through a dryer and a firing furnace positioned at the outlet of the extruder (Abstract).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have combined the method disclosed by Billwiller of creating an aqueous paste of water, magnesium oxide and vegetable fiber with the method taught by Takahashi by extruding the aqueous paste and passing it through a heating device positioned at the outlet of the extruder since Takahashi discloses that this is an effective way of forming a ceramic article.

While Billwiller and Takahashi do not disclose that the heating takes place for 2 to 5 minutes, this would have been obvious to one of ordinary skill in the art when taking the prior art as a whole. This is because one of ordinary skill in the art would recognize when the hardening in the heating device was completed and would be motivated to stop the heating at that time in order to avoid the costs of continuing the heating step unnecessarily. Based on the Applicant's amended claims, it appears that an extruded body of a magnesium oxide containing compound placed into a heating device (such as by the combination of Billwiller and Takahashi) results in a hardened finished product in 2 to 5 minutes.

Response to Arguments

Applicant's arguments filed 17 December 2007 have been fully considered but they are not persuasive.

Applicant's arguments regarding the combination of Billwiller and Ghosh are considered moot in view of the new grounds of rejection of claims 1 and 2 above.

Applicant argues that Billwiller fails to anticipate claim 5 because it does not include each and every limitation recited in the claim, specifically the "preheated mold" and "rapidly harden the admixture" limitations. As discussed above, claim 5 is a product-by-process claim, and as such the determination of patentability is based on the product made, not the process used to create that product. Currently, there does not appear to be, nor has the Applicant alleged any, difference between the product produced by Billwiller and that of the current invention.

Applicant next argues, with respect to claims 3 and 4, that the proposed rejection fails to teach how an injection mold and extruding operation, respectively, could be maintained for 12 to 16 hours, and still be functional to provide the necessary amount of product, and still make sufficient product for commercial processing.

First, it is not proposed that the process of the combined references used in the rejection would take 12 to 16 hours. When assessing what the prior art would teach one of ordinary skill in the art, the combination of references must be taken as a whole. In the current case, it appears that the combination of references (heating the mixture of Billwiller to reduce the curing time) would result in a product that would rapidly harden. Therefore it would not be necessary to run an injection mold or extrusion system for 12 to 16 hours.

Second, it is not necessary that the combination of references produce a system that is commercially feasible, only that it be technically feasible and obvious to one of ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791

Application/Control Number: 10/733,770
Art Unit: 1791

Page 11

/R. J. K./
Examiner, Art Unit 1791